WHAT IS CLAIMED IS:

1. An angioplasty catheter comprising:

a catheter body having a proximal end and a distal end;

a radially expansible shell near the distal end of the catheter body;

an external structure carried over but unattached to the shell; and

an attachment structure having a proximal end and a distal end attached to the external structure, wherein the attachment structure is sufficiently sized and compliant to accommodate geometrical changes and reaction forces produced by the external structure as it is expanded by the shell.

2. A catheter as in claim 1, wherein the external structure comprises a scoring structure.

3. A catheter as in claim 1, wherein the external structure comprises a cutting structure.

4. A catheter as in claim 1, wherein at least a portion of the external structure is arranged helically over the shell.

5. A catheter as in claim 1, wherein the external structure has a proximal end and a distal end, and wherein the proximal end of the attachment structure is fixed to the catheter body and the distal end of the attachment structure is secured to the proximal end of the external structure.

6. A catheter as in claim 5, wherein the distal end of the external structure is fixed to the catheter body, and wherein the attachment structure axially extends to accommodate foreshortening of the external structure as the shell is expanded.

7. A catheter as in claim 6, wherein the attachment structure rotationally extends to accommodate rotation of the external structure as the shell is expanded.

8. A catheter as in claim 7, wherein the attachment structure comprises a compliance tube having an outer diameter and an inner diameter that extends over the catheter body.

9. A catheter as in claim 8, wherein the inner diameter of the compliance tube is larger than an outer diameter of the catheter body so that the compliance tube freely extends with respect to the catheter body as the external structure foreshortens.

10. A catheter as in claim 9, wherein the compliance tube inner diameter is sized so that the compliance tube freely rotates with respect to the catheter body as the external structure rotates.

11. A catheter as in claim 9, wherein the compliance tube is sized to control the compliance of the external structure and expansible shell.

12. A catheter as in claim 11, wherein the compliance tube has a wall thickness ranging from 0.01 in. to 0.1 in.

13. A catheter as in claim 11, wherein the compliance tube has a length ranging from 1cm to 10 cm.

14. A catheter as in claim 9, wherein the material of the compliance tube is selected to control the compliance of the external structure and expansible shell.

15. A catheter as in claim 14, wherein the compliance tube comprises an elastic material.

16. A catheter as in claim 15, wherein the compliance tube comprises a polymer selected from the group consisting of nylon or Pebax.

17. A catheter as in claim 15, wherein the compliance tube comprises a braided material.

18. A catheter as in claim 15, wherein the compliance tube comprises a metal.

19. A catheter as in claim 18, wherein the compliance tube comprises a wire mesh.

20. A catheter as in claim 9, wherein the compliance tube has one or more perforations to control the compliance of the external structure and expansible shell.

21. A catheter as in claim 20, wherein the one or more perforations comprise one or more slots extending along the outside circumference of the compliance tube.

22. A catheter as in claim 21, wherein the slots form a pattern along the outside circumference of the compliance tube.

23. A catheter as in claim 22, wherein the slots are parallel to each other.

24. A catheter as in claim 22, wherein the slots extend helically across the compliance tube.

25. A catheter as in claim 22, wherein the slots extend radially across the compliance tube.

26. A catheter as in claim 22, wherein the slots are circular in shape.

27. A catheter as in claim 22, wherein the slots are rectangular in shape.

28. A catheter as in claim 8, wherein the compliance tube has an outer diameter that tapers from its distal end to its proximal end.

29. A catheter as in claim 28, wherein the outer diameter of the compliance tube tapers down from in the range of .04 in. to .010 in. from the distal end and to the proximal end.

30. A external catheter as in claim 1, wherein the attachment structure is connected at its distal end to the external structure and at its proximal end to a manipulator.

31. A catheter as in claim 30, wherein the manipulator is positioned at the proximal end of the catheter body and the attachment structure extends from the external structure across the length of the catheter body.

32. A catheter as in claim 30, wherein the attachment structure axially extends to accommodate foreshortening of the external structure as the shell is expanded.

33. A catheter as in claim 32, wherein the attachment structure rotationally extends to accommodate rotation of the external structure as the shell is expanded.

34. A catheter as in claim 33, wherein the attachment structure comprises a compliance tube having an outer diameter and an inner diameter that extends over the catheter body.

35. A catheter as in claim 34, wherein the inner diameter of the compliance tube is larger than an outer diameter of the catheter body so that the compliance tube freely extends and rotates with respect to the catheter body as the external structure foreshortens.

36 . A catheter as in claim 35, wherein the compliance tube has a wall thickness and a length that are sized to control the compliance of the external structure and expansible shell.

37. A catheter as in claim 35, wherein the compliance of the external structure is controlled by actuating the manipulator during expansion of the radially expansible shell.

38. A catheter as in claim 35, wherein the compliance of the external structure is controlled by actuating the manipulator during contraction of the radially expansible shell.

39. A catheter as in any of claims 37 or 38, wherein actuating the manipulator comprises axially advancing the attachment structure with respect to the catheter body.

40. A catheter as in claim 39, wherein axially advancing the attachment structure comprises pulling the attachment structure away from the distal end of the catheter body.

41. A catheter as in any of claims 37 or 38, wherein actuating the manipulator comprises rotating the attachment structure with respect to the catheter body.

42. A method of dilatating a stenosed region in a blood vessel, the method comprising:

introducing an external structure carried over an expansible shell that is connected to a catheter body by an attachment structure;

expanding the external structure within a stenosed region within the blood vessel, wherein the attachment structure axially extends to accommodate foreshortening of the external structure as the shell is expanded.

43. A method as in claim 42, wherein the attachment structure rotationally extends to accommodate rotation of the external structure as the shell is expanded.

44. A method as in claim 43, wherein the attachment structure comprises a compliance tube having an outer diameter and an inner diameter that extends over the catheter body.

45. A method as in claim 44, wherein the inner diameter of the compliance tube is larger than an outer diameter of the catheter body so that the compliance tube freely extends and rotates with respect to the catheter body as the external structure foreshortens.

46. A method as in claim 44, wherein the compliance tube is sized to control the compliance of the external structure and expansible shell.

47 . A method as in claim 46, wherein the compliance tube has a wall thickness ranging from 0.01 in. to 0.1 in.

48. A method as in claim 46, wherein the compliance tube has a length ranging from 1cm to 10 cm.

49. A method as in claim 44, wherein the material of the compliance tube is selected to control the compliance of the external structure and expansible shell.

50. A method as in claim 49, wherein the compliance tube comprises an elastic material.

51. A method as in claim 50, wherein the compliance tube comprises a polymer.

52. A method as in claim 43, wherein the external structure has a proximal end and a distal end, and wherein the method further comprises the step of fixing the proximal end of the attachment structure to the catheter body.

53. A method as in claim 43, wherein the external structure has a proximal end and a distal end, and wherein the method further comprises the step of fixing the proximal end of the attachment structure to a manipulator.

54. A method as in claim 53, wherein the manipulator is positioned at the proximal end of the catheter body and the attachment structure extends from the external structure across the length of the catheter body.

55. A method as in claim 54, wherein the compliance of the external structure is controlled by actuating the manipulator during expansion of the radially expansible shell.

56. A method as in claim 54, wherein the compliance of the external structure is controlled by actuating the manipulator during contraction of the radially expansible shell.

57. A method as in any of claims 55 or 56, wherein actuating the manipulator comprises axially advancing attachment structure with respect to the catheter body.

58. A method as in claim 57, wherein axially advancing attachment structure comprises pulling the attachment structure away from the distal end of the catheter body.

59. A method as in any of claims 55 or 56, wherein actuating the manipulator comprises rotating the attachment structure with respect to the catheter body